

FP Range 2-14 Zone Fire Alarm Control Panels INSTALLATION INSTRUCTIONS

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING AND/OR MAINTAINING THIS EQUIPMENT

These instructions are general and cannot be considered to cover every aspect of fire alarm installation.

We recommend you read BS 5839: Pt 1: 1988 "Fire Detection and Alarm Systems for Buildings" (available at your local reference library or from the BSI).

No responsibility can be accepted by the manufacturers or distributors of this range of fire panels for any misinterpretation of an instruction or guidance note or for the compliance of the system as a whole.

Contact the Fire Officer concerned with the property at an early stage in case he has any special requirements. We strongly recommend that a suitably qualified and competent person is consulted in connection with the design of the Fire Alarm system.

The manufacturers policy is one of continuous improvement and we reserve the right to make changes to product specifications at our discretion and without prior notice. E&OE.

IMPORTANT NOTES

1. This equipment must only be installed and maintained by a **suitably skilled or technically competent person**.
2. This equipment is a piece of class 1 equipment and MUST BE EARTHERED.
3. To meet the requirements of BS 5839 Part 1 1988 Amendment N° 1 (Effective Jan. 1991) "Fire Detection and Alarm Systems for Buildings", manual call points must still operate when any detector(s) are removed from their bases. This must be done whether or not the detectors have locking or shorting devices. To comply, either the manual call points must be wired before the detectors, or detector bases with diodes fitted must be used to ensure continuity when detectors and call points are installed in mixed order. If diodes are incorporated then the FP Range of panels will not show a fault when a detector is removed unless an EMU (Electronic Monitoring Unit - BF378) or MINIMU (Miniature Electronic Monitoring Unit - BF378M) is substituted for the End of Line Resistor (see page 3).
4. If you connect the battery leads in reverse you will blow the battery fuse and you **RISK DAMAGING THE PANEL**. The fault is factory detectable and you **WILL BE CHARGED FOR THE REPAIR**.
5. If the Battery/Power Supply fault light comes on whilst the Green Mains On light is lit then it usually means that the battery is either discharged or faulty (see page 9 inside for details).

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■ GUIDE TO FIRE ALARM SYSTEM DESIGN

CONTROL PANEL

The fire panel must be sited internally, in an area where it is readily accessible by staff on duty and the fire brigade. The area should be clean and dry and you should take into account any likelihood of tampering or vandalism. The ambient light and sound levels should allow the status of the indicators to be clearly seen and the internal sounder to be heard. Full details can be found in BS 5839: Pt1: 1988: Section 15.3 "Fire Detection and Alarm Systems for Buildings".

LOUDSPEAKERS

ALL LOUDSPEAKERS MUST BE POLARISED.
UNPOLARISED LOUDSPEAKERS WILL SHOW A LOUDSPEAKER FAULT.

The most common sounders are bells and electronic sounders. *Motorised sirens MUST NOT be used on these panels*. The same type of sounder must be used throughout the building and it must be distinctive so that the sound associated with a fire alarm is easily recognised.

The minimum sound level is 65 dB or 5 dB above any background noise likely to persist for longer than 30 seconds. The fire alarm must be audible in every part of the building. For sleeping accommodation the sound level should be 75 dB at the bedhead if sleeping people with normal hearing are to be wakened.

Two sounder circuits are provided. Sounders should be wired in approximately equal numbers on each circuit.

One sounder should be adjacent or near to the control panel.

MANUAL CALL POINTS

Manual Call Points should be sited on all exit routes especially on landings and staircases and by final exit doors, with a maximum distance from any place in the building to a Call Point of 30 metres, (less distance in high risk areas). They should ideally be sited 1.4 metres above the floor and in a conspicuous and easily reached position. Any number of call points can be connected on each zone.

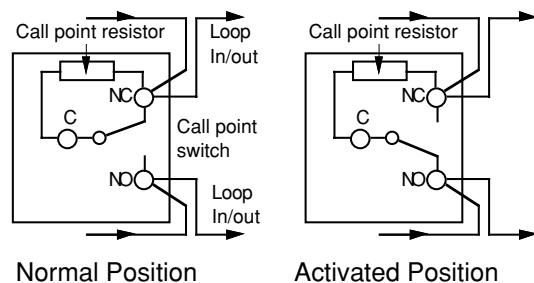
Important. Many call points are now supplied with a resistor already fitted. This can be determined by measuring with a good quality Ohmmeter. The call point should normally measure open circuit, and between 470 and 680 ohms when activated. If the call points are not of this type then a series resistor must be connected in series with the call point in order to ensure that an alarm condition will occur. See figure 1 for fitting diagram.

Note: Resistors are not included with the panel instruction pack but are available from electronic component suppliers. Failure to include this resistor will cause the panel to show a short circuit fault when the call point is operated. This also applies to

any other form of switch used to trigger the detector circuits.

N.B. It is possible to disable the short circuit = fault condition for each zone so that a short circuit will cause a fire condition (see page 7 for further details).

FIGURE 1



SMOKE AND HEAT DETECTORS

See page 10 for maximum amount.

Smoke Detectors: There are two types of smoke detector, Ionisation and Optical. Ionisation are generally quickest at detecting a clean burning fire. Optical are quickest at detecting smouldering fires. Neither one is better than the other in all circumstances. Some Fire Authorities will only allow one kind and you should check with the Fire Officer. Do not site smoke detectors in draughts. Siting of the detectors depends on many factors and BS5839: Pt1: 1988 "Fire Detection and Alarm Systems for Buildings" should be consulted for full details of spacing, etc.

Dirt, dust, smoke, steam, water vapour and condensation will affect the detectors, causing false alarms and the need for frequent cleaning. Under these conditions, the use of heat detectors should be considered (see below). If in doubt, consult the Fire Officer.

Note: Building work causes adverse conditions. If possible, remove all detectors from site until work is completed to avoid contamination.

Heat Detectors: These are used in places where smoke detectors are not practical, such as kitchens and boiler rooms. There are two kinds, Fixed Temperature and Rate of Rise. Fixed Temperature Heat Detectors are used where sudden rises in temperature which would cause alarms are common, such as in kitchens. Rate of Rise Heat Detectors are used elsewhere as they generally respond faster than Fixed Temperature Detectors.

BATTERIES

For the emergency stand-by power supply, two good quality 12V sealed lead acid batteries (connected in series) should be used. They should be of a type that have at least four years life under normal conditions. Consult BS5839: Pt1: 1988 "Fire Detection and Alarm Systems for Buildings".

The capacity of the batteries used will depend on the required stand-by time (See 'Panel Specification', page 10, for stand-by times). Note that the number of sounders, detectors and other loads supplied from the panel also alter the stand-by time of the batteries.

For battery connection details, see 'Installation - Second Fix', page 5. Always dispose of used batteries according to the battery manufacturers instructions.

Important: The FP Range of panels features a sophisticated battery monitoring circuit which, instead of monitoring the current being passed through the batteries, actually detects their condition. Consequently, a discharged battery or one with deteriorating cells will show a BATTERY/POWER SUPPLY FAULT. Test with brand new, fully charged batteries.

CABLE TYPES

Sounders must be wired in cable complying with, for example, BS6207 (MICC or 'pyro'). Detectors may be wired in cable complying with, for example, BS6004 (PVC) or BS6207. Ensure you comply with BS5839 Pt1:1988 "Fire Detection and Alarm Systems for Buildings" regarding siting, installation and choice of cables.

NOTES ON THE OVERALL DESIGN

If you are suitably qualified decide on the position of all parts and mark the plans accordingly. Get the Fire Officer to check the plans to ensure compliance with any special requirements he may have.

The Fire Officer has the right to refuse to grant a fire certificate until he is satisfied.

Note: To fully comply with BS5839 Part 1 Manual Call points must still operate when any of the Detectors are removed. This can be accommodated by wiring Call Points first or by using detector bases with continuity diodes fitted and substituting an Electronic Monitoring Unit (BF378 or BF378M) for the detector circuit End of Line Resistor.

Note: Some manufacturers supply bases with integral continuity diodes (see page 10 for type and quantity).

When planning cable runs note that the panel has provision for terminating two sounder circuits. It is not possible to terminate more than two circuits at the panel and have correct monitoring of the wiring (refer to figure 2 below).

■ INSTALLATION - FIRST & SECOND FIXES

Install the cables and fit call point back boxes and detector bases where possible. **N.B.** If continuity diodes are to be used in detector bases, mark incoming and outgoing cables to aid correct connection. Cables should be tested using a good quality multimeter.

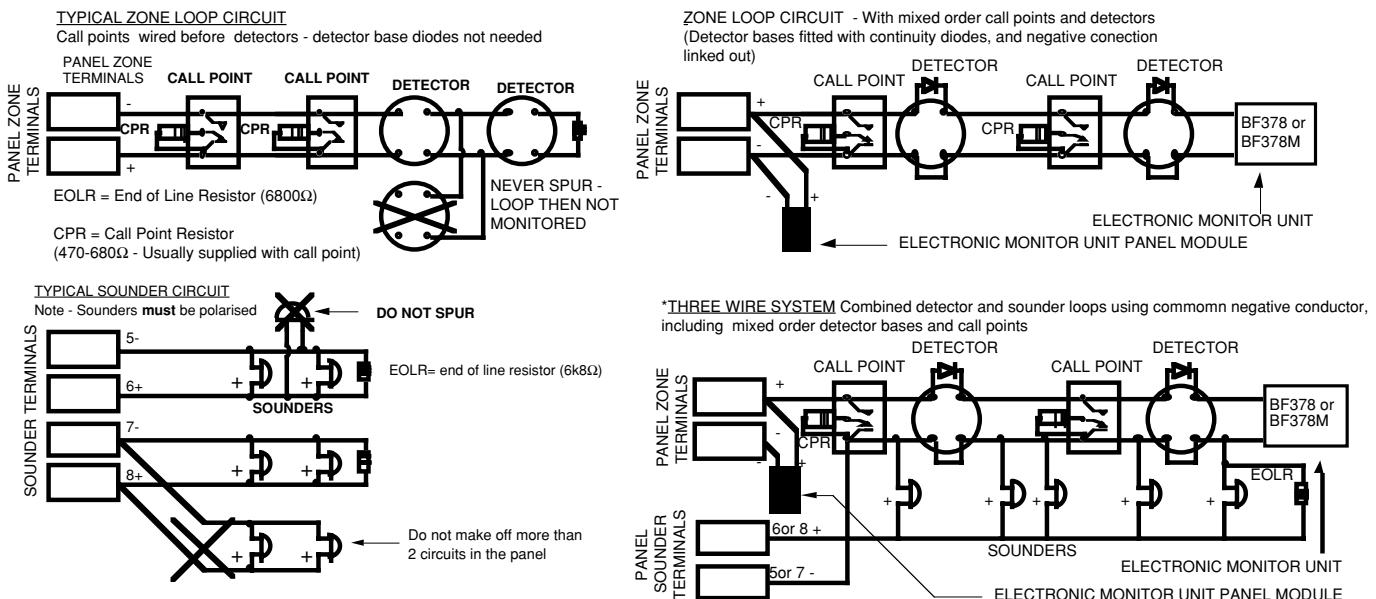
Do not use an insulation tester (Megger) with any detectors, sounders, continuity diodes or control equipment of any kind connected as the 500 volt

test voltage will destroy all of these devices totally.

If fitted, smoke detector bases must be 'linked out' to check wiring continuity.

Do not leave any part of the fire alarm system where it may become dusty or damp (due to any building work such as plastering, painting, carpet fitting,etc) as this will result in possible malfunctions, including false alarms.

FIGURE 2 : Typical wiring arrangements for detector and sounder circuits.



***IMPORTANT** Some cautionary points about the three wire system illustrated.

- This configuration is used to utilise existing wiring when refurbishing an existing system. New installations are not usually planned in this way.
- The system must be connected so that if any head is removed then all the sounders will still operate.
- Since the common wire carries all the current for the sounders and the detectors it should be of low impedance and connected to the sounder circuit negative. Check that when any detector is triggered that it will not be inadvertently reset by the sounder current in an alarm condition.

■ INSTALLATION - FIRST & SECOND FIXES

Take the control panel out of its box and undo the two screws at the top using the key provided in the accessory pack.

Hinge the lid down 180° and remove the earth connection. Locate the connector plug (PL7) on the main printed circuit board. Grasp the wires to the plug firmly and pull the connector off the board. Disconnect plugs of PL4 on any zone boards fitted. Hinge the lid back 90° and lift the front panel off.

The front panel may be removed from site until work is completed, if it is likely to get damaged.

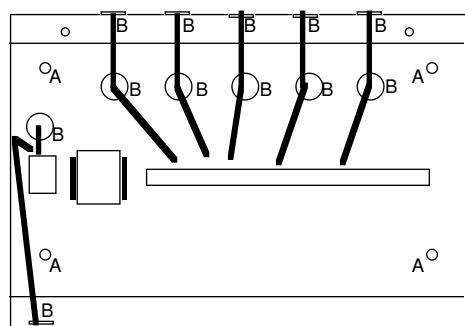
Fix the base of the fire panel securely to the wall using the mounting holes provided (see 'A', figure 3). The mounting holes are suitable for use with No. 8 round head or countersunk woodscrews. Assess the condition and construction of the wall and use a suitable screw fixing. Any dust created during the fixing process must be kept out of the fire panel, and great care must be taken not to damage any wiring or components.

All mains wiring should be provided in accordance with the current edition of the IEE Wiring Regs, 16th. Ed. (BS 7671, 1993) or in accordance with the relevant national wiring rules.

The general requirement for the mains supply to this equipment is fixed wiring, using three core cable, not less than 0.75mm² or a suitable three conductor system, fed from an isolating switch fuse spur, fused at 3A. This should be marked "FIRE ALARM: DO NOT SWITCH OFF" and should be secure from unauthorised operation.

The mains connection is made inside the fire panel to the fused mains terminal block only. Connection must not be made to the mains supply using a plug and socket. The mains supply should be exclusive to the fire panel. (Full details can be found in BS5839: Pt1: 1988 section 15.3. "Fire Detection and Alarm Systems for Buildings").

The wiring of the panel should be carefully planned before starting the job. Always ensure that if a knockout is removed, that the hole is filled with a good quality cable gland. Plan and route all of the wiring as indicated in Figure 3 by the dotted lines.

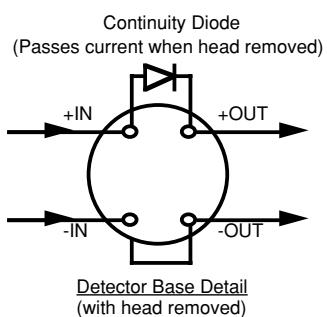
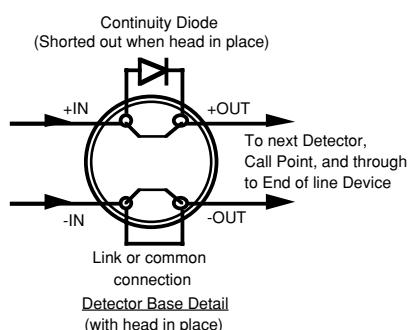
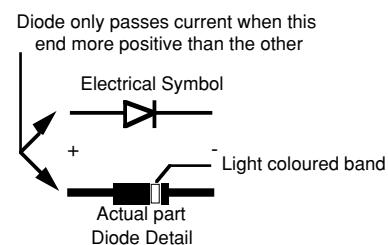


All external wiring brought into the panel should be adequately insulated with PVC, PTFE, Neoprene or other fire resistant /retardent material.

DO NOT connect the detector wiring into the terminal block in the panel until you have tested the panel (see page 5). With all power removed from the panel, fit the sounders, call points, and detectors. Before fitting the last devices on the sounder and detector circuits remove the End of Line Resistors from the terminal blocks and fit across the last device on each circuit.

If continuity diodes are to be used in detector bases then they must be fitted and wired in the correct orientation as shown in the Detector base details (see Figure 4).

FIGURE 4



The diode must be connected so that it is shorted out by the internal connections of the head when the head is in place, and provide a path for the current in the loop when the head is removed. Incorrect fitting will not cause damage but will cause malfunctions of the system. (See troubleshooting guide on page 9). The End of Line Resistor must be replaced by an Electronic Monitoring Unit (BF378 or BF378M) and its associated Panel Module. See BF378 or BF378M instructions and wiring arrangements on page 3 (figure 2).

Make off the detector and sounder circuits at the panel terminal block. When you are sure all connections are firm with no insulation trapped and no bare wires, replace the front of the panel and re-attach the relevant loom connectors.

Make sure that the earth wire is connected back up.

Next, power the system up by connecting the batteries. To determine the type and size of batteries required, refer to pages 2 and 10.

Connect the batteries in series using the link wire provided as shown in Figure 5. Always be sure of the connections before you make them as incorrect connection will blow the battery fuse (F5) and **MAY DAMAGE THE PANEL**.

Position the batteries in the panel as shown in Figure 6 (right).

Always dispose of used batteries according to the battery manufacturers instructions.

Once the batteries are connected, close up the panel (be careful not to trap any wires), fit the two lid screws and energize the mains supply. The panel should now be in the Normal mode. If not see troubleshooting guide page 9. Now test the system is fully operational (See 'Testing The Panel', below).

If the number of zones of the panel is to be increased, refer to the leaflet supplied with the relevant zone kit for installation instructions.

FIGURE 5 : Battery Connection

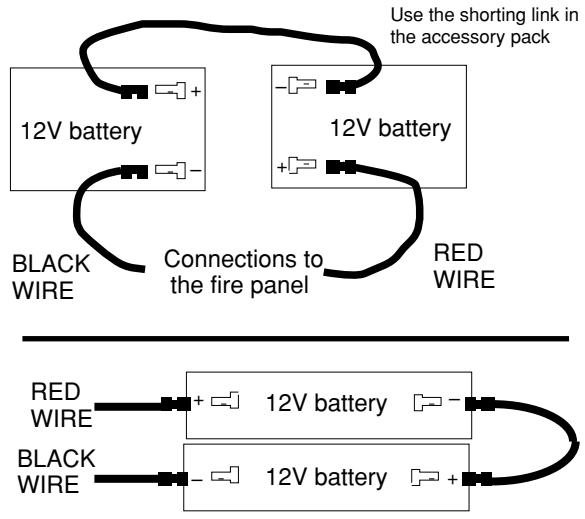
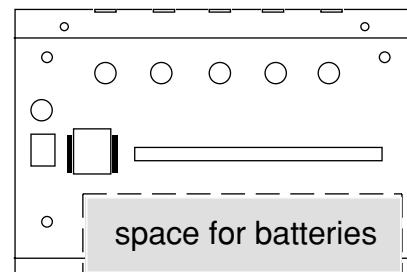


FIGURE 6



■ TESTING THE PANEL

THE PANEL CAN BE TESTED BEFORE CONNECTING UP

When testing or maintaining the panel with the panel lid open, always - where possible - isolate the mains and disconnect the batteries.

If testing before installation make sure the End of Line resistors are fitted in the sounder and detector terminals. Do not connect any wires except the mains feed.

Fit PL7 on the large main PCB (the red wire goes to the left hand side as marked on the circuit board) and any PL4's on the zone PCBs on the panel front (see figure 7, page 7 for PCB layout details).

Put two 12 Volt batteries of suitable capacity in the bottom of the box and connect as illustrated in figures 5 and 6 (above). Information on battery type and capacity can be found on pages 2 and 10.

When the batteries are connected, the MAINS/BATTERY FAULT light will light and the WARNING BEEPER will sound. **Incorrect connection will blow the battery fuse (F1) and MAY DAMAGE THE PANEL**

Connect the mains wiring and turn the mains supply on. The MAINS ON light will light, the MAINS/BATTERY FAULT light will go out and the WARNING BEEPER will silence, providing the batteries are not flat.

WITH THE KEYSWITCH AT NORMAL

The MAINS ON light is lit. No other lights are lit. No sounders are active. The push buttons are inoperative.

TURN THE KEYSWITCH TO ARM CONTROLS.

This allows the push buttons to be used by an authorised person but does not otherwise affect the panel.

Press RESET / RESOUND / TEST ZONE LAMPS. Whilst the button is pressed the ZONE FIRE LIGHTS and the ZONE FAULT LIGHTS will light and the WARNING BEEPER will sound. The green MAINS ON light will remain lit.

The MAINS/BATTERY FAULT and SOUNDER FAULT lamps will NOT light.

TEST THE POWER SUPPLY MONITORING CIRCUIT

Switch off the Mains. After several seconds the MAINS/BATTERY FAULT lamp will light, the MAINS ON light will extinguish, and the WARNING BEEPER will sound.

Press SILENCE FAULT SOUNDERS and the WARNING BEEPER will silence but the MAINS/BATTERY FAULT light will be lit.

Reconnect the mains and after a short time the panel will revert to normal.

Disconnect the Battery. After a short time the MAINS/BATTERY FAULT light will light and the WARNING BEEPER will sound.

Reconnect the battery and after a short time the panel will revert to normal (i.e. only the green MAINS lights on).

Note

- 1) This test should be carried out with a set of new and fully charged batteries – deteriorated cells will show a fault even when connected and charged up.
- 2) If good but completely discharged cells are used the MAINS/BATTERY FAULT light will stay on for several minutes until the battery obtains sufficient charge.

TEST THE SOUNDER MONITORING CIRCUIT(S)

DO NOT carry out this test with any red FIRE lights lit as the sounder fuse(s) F2, 3 could blow. Make sure the End of Line resistor is connected across the sounder circuits on terminals (5&6, 7&8).

Short the sounder terminals 5 & 6 and keep them shorted. The SOUNDER FAULT light will light and the WARNING BEEPER will sound.

Press SILENCE FAULT SOUNDERS and the WARNING BEEPER will silence but the SOUNDER FAULT light will stay on.

Remove the short and the panel will revert to normal.

Open circuit the sounder terminals 5 & 6 by removing one leg of the end of line resistor. The SOUNDER FAULT light will light and the WARNING BEEPER will sound. Press SILENCE FAULT SOUNDERS and the WARNING BEEPER will silence but the SOUNDER FAULT light will stay on.

Remake the circuit and the panel will revert to normal.

Repeat the tests for the other sounder circuit via terminals 7 & 8.

TEST THE DETECTOR MONITORING CIRCUITS

Make sure an End of Line device is connected across each pair of detector terminals (9 & 10, 11 & 12, etc.). The EOLD would either be a $6.8k\Omega$ Resistor or Electronic Monitoring Unit (EMU) and associated Panel Module, depending on the installation.

Four conditions can exist on the detector monitoring circuits.

- 1. Normal condition.** Current flows round the detector loop via the end of line resistor to monitor the wiring. Detectors and call points are connected in parallel across the line.
- 2. Open Circuit Fault.** The wiring is broken at some point and the monitoring current cannot flow.
- 3. Short Circuit Fault.** A dead short exists at some point and too much monitoring current flows.
- 4. Fire condition.** A partial short exists and the monitoring current increases but not enough to show a short circuit fault. Most smoke detectors make a

partial short when they are triggered, but manual call points need to have 470 to 680Ω resistors connected in series to give a partial short. (Check - Resistor may be incorporated in the Call Point, see page 2)

OPEN CIRCUIT FAULTS

Open circuit the detector terminals 9 & 10 by removing one wire of the EOLD. The ZONE 1 FAULT light will light and the WARNING BEEPER will sound. Inside the panel, the ZONE ONE OPEN CIRCUIT fault light will light. Press SILENCE FAULT SOUNDERS and the WARNING BEEPER will silence but the lights will stay on.

Remake the circuit and the panel will revert to normal.

SHORT CIRCUIT FAULTS

Short circuit the detector terminals 9 & 10 and keep them shorted. The ZONE 1 FAULT light will light and the WARNING BEEPER will sound. Inside the panel, the ZONE ONE SHORT CIRCUIT fault light will light. Press SILENCE FAULT SOUNDERS and the WARNING BEEPER will silence but the lights will stay on.

Remove the short and the panel will revert to normal.

Repeat the tests for the other detector circuits via terminals 11 & 12.

FIRE CONDITION

Simulate a Fire condition by connecting and activating a Manual Call point or by fitting a 470 to 680Ω across terminals 9 & 10. The sounder output relay will operate, the ZONE 1 FIRE light will flash – the panel has gone into alarm.

Press SILENCE ALARM SOUNDERS. The sounder output relay will click back and the ZONE 1 FIRE light will light steadily. The WARNING BEEPER will now sound.

Press RESET / RESOUND / TEST ZONE LAMPS and the panel will go back into alarm.

Remove the call point resistor.

Press SILENCE ALARM SOUNDERS then RESET / RESOUND / TEST ZONE LAMPS and the panel will revert to normal. Repeat the test for the other detector circuits via the other zone terminals.

Note

- 1) Pressing RESET/RESOUND/TEST ZONE LAMPS when in the fire condition (i.e. red lights flashing) has no effect.
- 2) When the fire alarm is silenced, i.e. steady red lights, the fault buzzer will be on and cannot be silenced.
- 3) Resetting the system from the silenced state with the fire condition still existing will RESOUND the alarm.

FINALLY

Press EVACUATE.

The output relays will switch over to operate the sounders. If you wish these tests can be carried out with a sounder and smoke detector and a call point from each circuit connected into each pair of terminals and the end of line resistors fitted to them.

■ ANCILLARY FACILITIES (SEE FIGURE 7 FOR LINK POSITIONS)

ENGINEERS TEST (NON-LATCH TEST) FACILITY

This range of panels has a non-latching test facility which allows manual call points and automatic smoke detectors to be tested and to reset automatically. To set this facility move the link plug marked PL1 on the main PCB from the lower to the upper position and the adjacent LED will light and the warning buzzer will sound and cannot be silenced. When an alarm condition is caused the alarm sounders will operate for about half a second and will silence for three seconds before resounding. This will continue until the cause of the alarm is removed by the smoke clearing from a detector or the call point being reset. When testing is complete, replace the link in the lower position (A non functional position to prevent link loss).



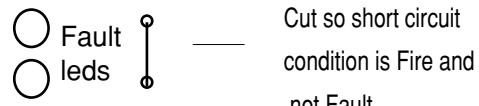
ZONE ISOLATION FACILITY

Each Detector Zone can be isolated individually if required by moving the link plug from the lower to the upper position. The adjacent LED and relevant zone fault LED will light to show that the zone is isolated. The warning buzzer will sound and can be silenced. When testing is complete, replace the link in the lower position (A non functional position to prevent link loss).



TO REVERT TO SHORT CIRCUIT = FIRE

Next to the Open and Short Circuit Fault indicating LEDs for each Zone is a link wire. Cutting this link overrides the short circuit fault monitoring circuit for that zone and allows the panel to be used on installations which do not have Call Point Resistors fitted. Note: This facility is for older installations only as it does not comply with the latest British Standards. If in doubt, seek advice from the fire officer.



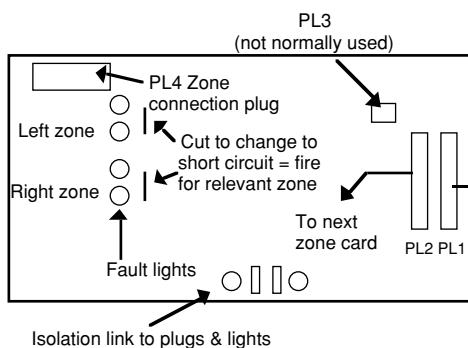
AUXILIARY EXPANSION PLUG (PL10)

This plug offers facilities for driving Repeater Panels, Fire and Fault relays, and a "Class Change" input. These facilities require various ancillary devices to be added to the panel. (not included).

AUX 24V +VE

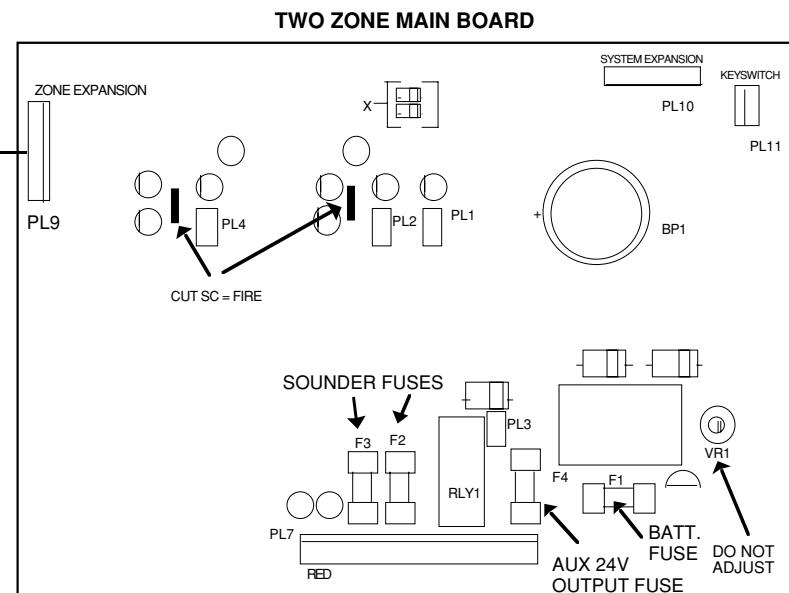
This output is a regulated but unmonitored output fused at 1A (F4), available from terminal 1 in the base. With link PL3 on the main PCB (adjacent relay) linked in position furthest from the F4 fuse on the Main PCB this output is continuous. If linked near to the fuse then the output is present when the panel is normal but is switched off when the relay is activated. This facility can be used to provide a fail-safe output via Aux 24v, that "switches off" when the sounders are activated or if the power to the panel fails. Note: any load provided by this output increases the quiescent drain on the panels supply which in turn affects the stand-by time of the system. It is not intended to supply door release systems (see next page).

FIGURE 7



TWO ZONE EXPANSION BOARD

Circuit board Layout and features



VOLTAGE FREE RELAY CONTACTS

These single pole relay outputs available via 2 (normally closed), 3 (common), and 4 (normally open) in the base connections change over when the sounders are activated. They **must not** be used to switch mains potentials, the contacts being rated at 30vD.C. and 1.0A.

NOTE ABOUT HOLDING MAGNETS (MAGNETIC DOOR RETAINERS)

BS5839 Pt1: 1988: "Fire Detection and Alarm Systems for Buildings" states that devices which draw current in the non Fire state and thus reduce the battery stand-by time must not be fitted. We therefore recommend that either:-

- 1) 24 Volt holding magnets should use a separate 24

Volt power supply under control of the panel. Ideally the separate supply should be of a "Hold off" type that requires very little control current from the panel.

- 2) 240 Volt holding magnets should be used, in which case a separate mains power switching 24 Volt coil relay, powered from the panel, should be used.

Special polarised relays (Part N°BF376) and PSUs (Part N° BF377) are available for connecting to the sounder circuits to allow control of Door Release systems.

REPEATER CONNECTIONS

Repeaters are driven from a transmitter board that requires connection to PL10 on the main PCB and and PL3 on the zone PCB.

FIRE ALARM SYSTEM INSPECTION

This is a requirement of BS5839 Pt1: 1988 "Fire Detection and Alarm Systems for Buildings" and should be carried out by person(s) responsible for supervising the system.

DAILY INSPECTION

Check the MAINS ON light is lit. Check no other lights are lit or sounders operating. Notify any faults to the installer.

WEEKLY TEST

Turn the Keyswitch to ARM CONTROLS and press RESET. Check the zone light shows and that the WARNING BEEPER sounds. Operate a call point or sensor to test the fire alarm. Check that the alarm sounders operate. Reset the fire alarm by pressing SILENCE and then RESET (Two people may be needed for this test). Each week test a different call point, so that all call points and sensors are tested in rotation. A building plan detailing the call point / sensor location is recommended. Check all call points and sensors and verify that none is obstructed in any way.

QUARTERLY TEST

Check all previous Log Book entries and verify that remedial action has been taken. Visually inspect the battery and its connections. Test the fire alarm as in the weekly test above. Remove the mains supply and check that the battery is capable of supplying the alarm sounders.

ANNUAL TEST

As for the weekly and quarterly tests but check every detector, call point, sounder and all auxiliary equipment for correct operation.

EVERY 2 -3 YEARS

Clean the smoke detectors to ensure correct operation and freedom from false alarms. Special equipment is required for cleaning smoke detectors. Consult your supplier if in doubt.

EVERY 4 YEARS

Replace sealed lead acid batteries.

Any defects noted in the above tests should be noted in the log book and appropriate remedial action taken.

SERVICING

REGULAR SERVICING IS STRONGLY RECOMMENDED, preferably on a continuous maintenance contract by a competent organisation.

A full itemised report on every part of the installation should be obtained at least annually.

TROUBLESHOOTING

ISOLATE THE MAINS WHILST THE LID IS OPEN

PERMANENT MAINS / BATTERY FAULT

1. Check the MAINS ON light is lit. If not, check the mains supply and fuse (adjacent the transformer).
2. Check the battery supply (RED lead to +Ve terminal, BLACK lead to -Ve terminal). If the battery leads have been connected the wrong way round the battery fuse (F1) will blow, however a permanent power fault may have been caused and CANNOT be reset. The fault is factory detectable and is not covered by the warranty.
3. Check two 12 Volt batteries of the relevant size are connected in series.
4. Check the wiring loom is pushed on properly to PL7.
5. Check the transformer leads are pushed on to the tags on the transformer properly.
6. If the MAINS ON & MAINS/BATTERY FAULT lights are still lit, the batteries are either very discharged or have failed - try a new pair, even new batteries can fail.

If the batteries are completely discharged or if they are inferior but still working, the battery fault circuit will still show a fault - check this using new batteries. Please note that a fully charged 24 Volt battery (i.e. 2 x 12v in series) will measure 26 to 28 Volts. If it measures less than 25 Volts it is almost completely flat, less than 21 Volts it is either totally exhausted or may have a faulty cell.

A battery measuring less than 21 Volts that has been charged from the panel for more than 10 minutes is unlikely to recharge properly and should be replaced. The battery monitoring circuit will show a BATTERY/POWER SUPPLY FAULT, which, if it does not cease, means that the batteries are faulty.

If good but completely discharged cells are used the MAINS/BATTERY FAULT light may stay on for several minutes until the battery obtains sufficient charge.

MANUAL CALL POINTS AND NORMALLY OPEN SWITCHES CAUSE A SHORT CIRCUIT FAULT WHEN TRIGGERED

A call point resistor has not been fitted in series at each call point or switch. A resistor MUST be fitted as the British Standard requires short circuit monitoring facility from 1st January 1990.

MANUAL CALL POINTS, HEAT DETECTORS, OR SMOKE DETECTORS TRIGGER, BUT DON'T CAUSE A FIRE CONDITION

Either the wrong value call point resistor has been fitted in series at the call point or detector or a resistor is already fitted inside. If you have fitted a resistor try shorting it out and re-testing the device. Check the panel is OK, by removing the detector wiring and then re-inserting the End of Line Resistor into the terminals to give a normal condition. Then simulate a fire condition on the zone with a 470 to 680 Ohm resistor. If the zone goes into fire the device under test may be out of specification.

RESET BUTTON DOESN'T RESET THE PANEL FROM FIRE CONDITION

Press SILENCE ALARM SOUNDERS first.

IF ANY FAULT CONDITION PERSISTS PLEASE CONSULT YOUR DEALER

RESET BUTTON STILL DOESN'T RESET THE PANEL (PERMANENT FIRE CONDITION)

Either a call point is triggered in which case replace the glass or if an older bi-metal heat detector has triggered, wait for it to cool down and reset itself.

Alternatively a smoke detector may be faulty and will not unlatch, in which case the LED on the detector may not be lit, or a call point may have failed in the triggered state. If you suspect a faulty device then you can only find it by following logical tests. Start by removing the wiring at the panel and refitting the End of Line Device (EOLD) to prove the panel is OK. Reconnect the wiring and replace the EOLD on the last device. Then starting at the end of the line, remove each detector in turn, then press Silence then Reset. When you reach the faulty device the panel will remain reset.

PERMANENT ZONE FAULT

Disconnect the zone completely and refit the End of Line Device (EOLD) at the panel. If the fault condition clears then there is a wiring fault. Double check and refit the wiring and EOLD on the zone and trace the fault with consideration for the type of fault indicated by the internal Fault leds.

A common fault is a detector badly seated in a base, which has not properly made connection. This will show as an open circuit Fault.

If an Electronic Monitoring Unit (BF378 or BF378M) is fitted check that the Panel module is fitted correctly (Red wire = +Ve, Black = -Ve), and that only the EMU is fitted at the end of the detector loop. An End of Line Resistor is not required when an EMU is fitted.

N.B. When the EMU detects that a head has been removed (i.e. there is a diode in circuit) then it reduces the loop monitoring current. In this state the panel will then indicate a open circuit fault condition.

MANUAL CALL POINTS NOT OPERATIONAL WHEN HEADS REMOVED

Check that the diodes are fitted correctly in the detector bases and / or the bases have not been miswired. If so there will be no continuity past the removed detector. Refit the diode or remake the wiring. Note that the heads must be wired so that only the positive connection is broken when the head is removed and that the negative connection remains made. See wiring arrangements for Detector Bases (Page 3) and Electronic Monitoring Unit (BF378 or BF378M) instructions.

PERMANENT SOUNDER FAULT

Check the Sounder fuses (F2, 3) on the pcb have not blown and replace if necessary. If either fuse is blown a sounder fault will show. Check the correct End of Line Resistors have been fitted. Disconnect the relevant zone from the terminal block and refit the end of line resistor only. If the fault condition clears there is a wiring fault. Note that the sounders must be polarised.

BUTTONS DON'T WORK

Turn the keyswitch to ARM controls and press SILENCE ALARM/FAULT SOUNDERS and then RESET. If the fault persists, check the loom assembly from the keyswitch is seated correctly on pcb plug (PL11).

FP RANGE panel specifications

CONTROLS

EXTERNAL (KEYSWITCH OPERATED)

- Reset / Resound / Test Zone Lamps. ■ Evacuate.
- Silence Alarm Sounders. ■ Silence Fault Sounders.
- INTERNAL**
- One Man Detector Test. ■ Zone isolate.
- Revert to short circuit = fire (no resistors in call points).

EXTERNAL INDICATORS

- Sounder Fault. ■ Battery / Power Supply Fault.
- Mains On. ■ Zone Fire. ■ Zone Fault.

INTERNAL INDICATORS

- Open circuit zone fault. ■ Short circuit zone fault.
- Zone isolated. ■ Engineer Test Selected.

OUTPUTS

- Two sounder circuits (Alarm relay contacts can be obtained by connecting an RLP-24 relay to a sounder circuit).
- Ancillary connections for expansion modules will allow the following: (1) Repeater panels; (2) Multiple sounder outputs; (3) Connection to landlord panel.

	FP 2 (0.8A SUPPLY)	FP 4 / 6 (1.4A SUPPLY)	FP 8 / 10 / 12 / 14 (3.0A SUPPLY)
POWER SPECIFICATION			
MAINS SUPPLY VOLTAGE	230V ± 10%V.a.c. 50/60Hz	230V ± 10%V.a.c. 50/60Hz	230V ± 10%V.a.c. 50/60Hz
INTERNAL POWER SUPPLY	27Vd.c.	27Vd.c.	27Vd.c.
TOTAL OUTPUT CURRENT LIMITED TO	800 mA @ 240 V.a.c.	1400 mA @ 240 V.a.c.	3000 mA @ 240 V.a.c.
AUXILIARY POWER OUTPUT	27 Vd.c.	27 Vd.c.	27 Vd.c.
MAINS SUPPLY MONITORED FOR FAILURE	YES	YES	YES
BATTERY CHARGER MONITORED FOR FAILURE	YES	YES	YES
BATTERIES MONITORED FOR DISCONNECTION AND FAILURE	YES	YES	YES
DETECTOR CIRCUIT SPECIFICATION			
NUMBER OF CIRCUITS	2	4 or 6	8, 10, 12 or 14
LINE FAULT MONITORED FOR OPEN CIRCUIT	YES	YES	YES
LINE FAULT MONITORED FOR SHORT CIRCUIT	YES (Can be disabled)	YES (Can be disabled)	YES (Can be disabled)
LINE FAULT MONITORED FOR DETECTOR REMOVAL	Yes, if End of Line Monitor Unit fitted in place of End of Line Resistor		
END OF LINE RESISTOR (SUPPLIED) VALUE	6800Ω, 5% tolerance, 0.25W	6800Ω, 5% tolerance, 0.25W	6800Ω, 5% tolerance, 0.25W
DETECTOR CONTINUITY DIODES	Silicon 1N4001 or Schottky type (required if End of Line Monitor Unit fitted to give Detector Removal Fault)		
CALL POINT RESISTOR VALUE (NOT SUPPLIED)	470 to 680Ω, 0.5W	470 to 680Ω, 0.5W	470 to 680Ω, 0.5W
MAXIMUM NUMBER OF SMOKE DETECTORS PER ZONE	20 (maximum detector current = 2mA)	20 (maximum detector current = 2mA)	20 (maximum detector current = 2mA)
MAXIMUM NUMBER OF MANUAL CALL POINTS PER ZONE	No limit	No limit	No limit
SOUNDER CIRCUIT SPECIFICATION			
NUMBER OF CIRCUITS	2	2	2
END OF LINE RESISTOR VALUE	6800Ω, 5% tolerance, 0.25W	6800Ω, 5% tolerance, 0.25W	6800Ω, 5% tolerance, 0.25W
LINE FAULT MONITORED FOR OPEN CIRCUIT	YES	YES	YES
LINE FAULT MONITORED FOR SHORT CIRCUIT	YES	YES	YES
OUTPUTS FUSED AT	1 Amp	1 Amp	1.6 Amp
MAXIMUM TOTAL OUTPUT CURRENT ALL OUTPUTS	800 mA	1400mA	3000mA
MAXIMUM NO OF BELLS @ 25 mA EACH BELL	32	56	120
MAXIMUM NO OF ELECTRONIC SOUNDERS @ 20 mA	40	70	150
AUXILIARY RELAY CONTACTS (DO NOT CONNECT MAINS VOLTAGES)	1A 30 Vd.c. max Voltage Free	1A 30 Vd.c. max Voltage Free	1A 30 Vd.c. max Voltage Free
FUSES - ALL FUSES COMPLIANT TO IEC (EN60127 PT2)			
MAINS TERMINAL BLOCK	200mA T 20 mm	400mA T 20mm	630mA T 20mm
SOUNDER OUTPUTS, F2, F3	1A F 20mm	1A F 20 mm	1.6A F 20mm
AUXILIARY OUTPUT, F4	1A F 20mm	1A F 20mm	1A F 20mm
BATTERY FUSE, F1	1.6A F 20mm	1.6A F 20mm	3A F 20mm
DOOR RETAINING MAGNETS	DO NOT USE PANEL POWER SUPPLY AS YOU WILL DRAMATICALLY REDUCE BATTERY STAND-BY TIME		
CONNECTION BLOCK			
LARGEST ACCEPTABLE CONDUCTOR SIZE	2.5mm ²	2.5mm ²	2.5mm ²
SMALLEST ACCEPTABLE CONDUCTOR SIZE	0.75mm ²	0.75mm ²	0.75mm ²
DIMENSIONS			
ENCLOSURE (WIDTH x HEIGHT x DEPTH)	322 x 267 x 92mm	405 x 267 x 92mm	521 x 334 x 140mm
WEIGHT (WITHOUT BATTERIES)	4.3 kg	5.0 kg	9.2 kg
ANCILLARIES (Individual datasheets available on request)			
REPEATER PANELS (available in 10 and 20 zone versions)	Up to three repeaters per control panel. Wiring = five cores plus one per zone. Maximum cable length = 200 metres. Facilities = common fault light; one fire light per zone; warning buzzer; test button (tests lights, buzzer & interconnecting wiring).		
4 ZONE MONITORED SOUNDER EXTENDER KITS	Connects to existing sounder circuits to provide four additional monitored sounder circuits.		
RLP-24 5A RELAY ON PLATE (Fits single gang back boxes)	General purpose polarised and suppressed relay for use with 24 volt fire alarm systems. Can switch mains loads.		
FLUSH BEZELS	Available in two different sizes to fit all variants of master panel and repeater metalwork, except two zone.		

QUIESCENT CURRENT / BATTERY STAND-BY TIME (HRS)

NUMBER OF ZONES	2	4	6	8	10	12	14
QUIESCENT CURRENT (mA)	40	50	60	70	80	90	100
MAX LOAD CURRENT (A)	0.80	1.40	1.40	3.00	3.00	3.00	3.00
STAND-BY (HRS) BATT. SIZE 2.0	40	26	-	-	-	-	-
STAND-BY (HRS) BATT. SIZE 2.6	55	38	32	-	-	-	-
STAND-BY (HRS) BATT. SIZE 4.0	90	66	55	36	31	28	25
STAND-BY (HRS) BATT. SIZE 6.0	-	106	88	64	56	50	45
STAND-BY (HRS) BATT. SIZE 10.0	-	-	-	121	106	94	85

The quiescent currents are given for the following conditions - No mains supply, fault beeper muted, no aux. output connections, end of line devices and resistors only fitted to detector and sounder loops.

The battery stand-by times are guidelines only based on the above conditions and a full sounder load for 30 minutes. Additional loads that increase the quiescent current in the normal state must be considered when calculating stand-by time. The fault beeper being active will add 10mA and reduced sounder loads will increase the stand-by time. Batteries in poor condition greatly reduce stand-by time.

After completing and testing the fire alarm system the following certificate must be completed and handed to the occupier together with the Log Book which also requires completion where indicated.

CERTIFICATE OF INSTALLATION AND COMMISSIONING OF A FIRE ALARM SYSTEM AT:-

Protected area _____

Address _____

My attention has been drawn to the recommendations of BS5839: Part 1 clause 29, relating to servicing the system. In accordance with BS5839: Part 1: 1988, subclause 26.1, record drawings and operating instructions have been supplied and received by:

Signed _____ Status _____ Date _____

For and on behalf of (user) _____

In accordance with BS5839: Part 1: 1988, subclause 26.2, the installation has been inspected for compliance with the recommendations of the code.

In accordance with BS5839: Part 1: 1988, subclause 26.3, the insulation of cables and wires has been tested.

In accordance with BS5839: Part 1: 1988, subclause 26.4, the earthing has been tested.

In accordance with BS5839: Part 1: 1988, subclause 26.5, the entire system has been tested for satisfactory operation.

In accordance with BS5839: Part 1: 1988, subclause 26.6, it is certified that the installation complies with the recommendations of the code, other than the following deviations:-

Signed (Commissioning engineer) _____ Date _____

For and on behalf of _____

The system log book is situated _____

The system documentation is situated _____

The system keys are kept by _____

SYSTEM INSPECTION

This is a requirement of BS5839 Pt 1: 1988 "Fire Detection and Alarm Systems for Buildings" and should be carried out by person(s) responsible for supervising the system.

DAILY INSPECTION

Check the MAINS ON light is lit. Check no other lights are lit or sounders operating. Notify any faults to the installer.

WEEKLY TEST

Turn the Keyswitch to ARM CONTROLS and press RESET. Check the zone light shows and that the WARNING BEEPER sounds. Operate a call point or sensor to test the fire alarm. Check that the alarm sounders operate. Reset the fire alarm by pressing SILENCE and then RESET (Two people may be needed for this test). Each week test a different call point, so that all call points and sensors are tested in rotation. A building plan detailing the call point / sensor location is recommended. Check all call points and sensors and verify that none is obstructed in any way.

QUARTERLY TEST

Check all previous Log Book entries and verify that remedial action has been taken. Visually inspect the battery and its connections. Test the fire alarm as in the weekly test above. Remove the mains supply and check that the battery is capable of supplying the alarm sounders.

ANNUAL TEST

As for the weekly and quarterly tests but check every detector, call point, sounder and all auxiliary equipment for correct operation.

EVERY 2 - 3 YEARS

Clean the smoke detectors to ensure correct operation and freedom from false alarms. Special equipment is required for cleaning smoke detectors. Consult your supplier if in doubt.

EVERY 4 YEARS

Replace sealed lead acid batteries.

Any defects noted in the above tests should be noted in the log book and appropriate remedial action taken.

SERVICING

REGULAR SERVICING IS STRONGLY RECOMMENDED, preferably on a continuous maintenance contract by a competent organisation. A full itemised report on every part of the installation should be obtained at least annually.